

HISTORIC PROPERTY INVENTORY FORM

IDENTIFICATION SECTION

Field Site No. 183-H OAHP No. Date Recorded 11-Mar-99
Site Name Historic Solar Evaporation Basins
Common
Field Recorder Jim Sharpe
Owner's Name U.S. Department of Energy, Richland Operations Office
Address P.O. Box 550
City/State/Zip Code Richland, WA 99352

Status

- ☒ Survey/Inventory
☐ National Register
☐ State Register
☐ Determined Eligible
☐ Determined Not Eligible
☐ Other (HABS, HAER, NHL)
☐ Local Designation

Photography

Photography Neg. No. 74227-2cn
(Roll No. & Frame No.)
View of
Date

Classification

District ☐ Site ☐ Building ☐ Structure ☒ Object
District Status ☒ NR ☐ SR ☐ LR ☐ INV
Contributing ☒ Non-Contributing
District/Thematic Nomination Name Hanford Site Manhattan Project and Cold War Historic District

Description Section

Materials & Features/Structural Types

Building Type Industry
Plan
Structural System Concrete
No. of Stories

Roof Type

☐ Gable ☐ Hip
☐ Flat ☐ Pyramidal
☐ Monitor ☒ Other (specify)
☐ Gambrel Open topped water basins
☐ Shed

Roof Material

☐ Wood Shingle
☐ Wood Shake
☐ Composition
☐ Slate
☐ Tar/Built-up
☐ Tile
☐ Metal (specify)
☒ Other (specify) Open topped water basins
☐ Not visible

Foundation

☐ Log ☐ Concrete
☐ Post & Pier ☐ Block
☐ Stone ☒ Poured
☐ Brick ☐ Other (specify)
☐ Not visible

Cladding (exterior Wall Surfaces)

☐ Log
☐ Horizontal Wood Siding
Rustic/Drop
Clapboard
☐ Wood Shingle
☐ Board and Batten
☐ Vertical Board
☐ Asbestos/Asphalt
☐ Brick
☐ Stone
☐ Stucco
☐ Terra Cotta
☒ Concrete/Concrete Block
☐ Vinyl/Aluminum Siding
☐ Metal (specify)
☐ Other (specify)

Integrity

(Include detailed description in
Description of Physical Appearance)

Intact Slight Moderate Extensive
Changes to plan
Changes to windows
Changes to original cladding
Changes to interior
Other (specify)
Only a portion of the original facility remains

State of Washington, Department of Community Development
Office of Archaeology and Historic Preservation
111 21st Avenue Southwest, Post Office Box 48343
Olympia, Washington 98504-8343 (206)753-4011

LOCATION SECTION

Address 183-H Solar Evaporation Basins
City/Town/County/Zip Code Richland/Benton County/99352
Twp. 14 N Range 27 E Section 18 1/4 Section NE 1/4 1/4 Sec S 1/2
Tax No./Parcel No. Acreage
Quadrangle or map name Locke Island Wash., 1986
UTM References Zone 11 Easting 310400 Northing 5175080
Plat/Block/Lot
Supplemental Map(s)



High Styles/Forms (Check one or more of the following)

☐ Greek Revival ☐ Spanish Colonial Revival/Mediterranean
☐ Gothic Revival ☐ Tudor Revival
☐ Italianate ☐ Craftsman/Arts & Crafts
☐ Second Empire ☐ Bungalow
☐ Romanesque Revival ☐ Prairie Style
☐ Stick Style ☐ Art Deco/Art Moderne
☐ Queen Anne ☐ Rustic Style
☐ Shingle Style ☐ International Style
☐ Colonial Revival ☐ Northwest Style
☐ Beaux Arts/Neoclassical ☐ Commercial Vernacular
☐ Chicago/Commercial Style ☐ Residential Vernacular (see below)
☐ American Foursquare ☒ Other (specify)
☐ Mission Revival Cement water basins

Vernacular House Types

☐ Gable Front ☐ Cross Gable
☐ Gable Front and Wing ☐ Pyramidal/Hipped
☐ Side Gable ☒ Other (specify)
Industrial Vernacular

NARRATIVE SECTION

Study Unit Themes (check one or more of the following)

☐ Agriculture
☐ Architecture/Landscape Architecture
☐ Arts
☐ Commerce
☐ Communications
☐ Community Planning/Development

☐ Conservation
☐ Education
☐ Entertainment/Recreation
☐ Ethnic Heritage (specify) _____
☐ Health/Medicine
☐ Manufacturing/Industry
☐ Military

☐ Politics/Government/Law
☐ Religion
☐ Science & Engineering
☐ Social Movements/Organizations
☐ Transportation

☒ Other (specify) Manhattan Project & Cold War Era

☒ **Study Unit Sub-Theme(s)** Waste Mangement /Treatment (Liquid)

Statement of Significance

Date of Construction 1949 Architect/Engineer/Builder General Electric Company

☒ In the opinion of the surveyor, this property appears to meet the criteria of the National Register of Historic Places.

☒ In the opinion of the surveyor, this property is located in a potential historic district (National and/or local).

The 183-H Solar Evaporation Basins were part of the H-Reactor facilities. Originally, they were constructed as clearwells with 16 basins to support H-Reactor operations from 1949 to 1965. The facility provided water treatment and reservoir capacity for the reactor process water system. Following demolition of all but four basins in 1974, the remaining basins were placed back into service to provide waste reduction by natural evaporation of liquid chemical wastes from the fuel manufacturing process. Basin 1 was used to treat spent fuel fabrication waste from 1973 until 1978. Basins 2 and 3 received waste from the 300 Area in 1979. Basin 4 received waste materials from the other three basins from 1982 until 1985. The Solar Evaporation Basins received both routine and nonroutine wastes. Routine waste included spent acid tech solutions primarily nitric, sulfuric, hydrofluoric, and chromic acids products by the nuclear fuel fabrication process. Non-routine wastes included unused chemicals and spent solutions from miscellaneous processes, development tests, and laboratories. While in operation the Solar Evaporation Basins received 2.5 million gallons of routine waste along with over 3,000,000 lb of nitrate ion, 753,000 lb of sulfate ion, and 400,000 lb of copper.

It is the conclusion of the U.S. Department of Energy that the 183-H Solar Evaporation Basins, through their role in liquid waste treatment and management, are eligible for inclusion in the National Register of Historic Places under Criterion A as a contributing property within the Hanford Site Manhattan Project and Cold War Era Historic District.

Description of Physical Appearance

The original 183-H Water Treatment Facility consisted of a head house, chemical building, filter building, pump room, sixteen above ground concrete basins, and clean water storage vaults. Basins were constructed from cast-in-place concrete above grade. Each of the basins consisted of a shallow flocculation basin and a deeper sedimentation basin. Four of the basins were spared from demolition in 1974 for use as a solar evaporation facility for chemical waste, thus the name, 183-H Solar Evaporation Basins. These basins had a wall width of 6 inches and floors with a thickness of 5 inches. Each basin contained a subsidence basin and a shallow flocculation basin. The subsidence basin was 53 feet 6 inches wide by 95 feet long by 16 feet 6 inches deep at the north end and 15 feet 6 inches deep at the south end. This basin was used for settling out particulate matter in water. The flocculation basin was 45 feet 6 inches wide by 33 feet long by 9 feet 6 inches deep. The basins were separated by a redwood plank weir. Later, the 183-H sedimentation basins were converted to a solar pond for spent acid from the 300 Area and a ramp was installed to allow gravity unloading from trucks into the solar pond. Final closure of the facility included the installation of a cover to confine the remaining waste for at least 30 years.

Major Bibliographic References

Bechtel Hanford, Inc., 1995, *100-H Area Technical Baseline Report*. BHI-00127, Richland, Washington

Bechtel Hanford, Inc., 1996, *Engineering Evaluation/Cost Analysis for Disposal of Structural Concrete and Soil from the 183-H Solar Evaporation Basin*. BHI-00872, Richland, Washington.

United Nuclear Industries, 1984, *100 Deactivated Area Pictorial Review*. UNI-2780, Richland, Washington.

U.S. Department of Energy, 1995, *Closure Proposal: 183-H Solar Evaporation Basins*. DOE/RL-95-27, Richland, Washington.

U.S. Department of Energy, 1995, *Closure Proposal: 183-H Solar Evaporation Basins*. DOE/RL-95-27, Richland, Washington.

U.S. Department of Energy, 1988, *Interim Status Closure/Post-Closure Plan 183-H Solar Evaporation Basins*. DOE/RL 88-04, Richland, Washington.